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This 4th day of January, 2006

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[ABSTRACT OF THE DISCLOSURE]

[ABSTRACT]

A transflective liquid crystal display includes upper and lower panels facing each other. On the lower panel, there formed a plurality of gate lines and a plurality of data lines intersecting each other to define pixel areas arranged in a matrix. A plurality of thin film transistors connected to the gate lines and the data lines and a plurality of pixel electrodes connected to the thin film transistors are also provided on the lower panel. Each pixel electrode includes a transparent electrode and a reflecting electrode with high reflectance having a transmitting window. A black matrix having apertures opposite the pixel areas and a plurality of red, green and blue color filters are formed on the upper panel, and a passivation layer covers the color filters. The passivation layer includes thicker and thinner portions, and the thinner portion opposite the transmitting window. If the thickness of the passivation layer in the transmissive area and the reflective area is controlled to be different, especially for an ECB (electrically controlled birefringence) mode LCD which has various cell gap, path of the light for displaying an image can be made to be equalized by controlling the path d of the light passing through the liquid crystal layer in the transmissive area T and the reflective area R to satisfy the condition of $\Delta nd = \lambda / 2$, thereby improving the display characteristic of the LCD.

[REPRESENTATIVE FIGURE]

Fig. 2

[INDEX]

transmittance, organic layer, phase retardation, color filter

[SPECIFICATION]

[TITLE OF THE INVENTION]

COLOR FILTER PANEL, MANUFACTURING METHOD THEREOF AND TRANSFLECTIVE LIQUID CRYSTAL DISPLAY INCLUDING THE SAME

[BRIEF DESCRIPTION OF THE DRAWINGS]

Fig. 1 is a layout view of a TFT array panel for a transfective LCD according to an embodiment of the present invention;

Fig. 2 is a sectional view of an LCD including the TFT array panel shown in Fig. 1 taken along the line II-II';

Figs. 3a-3d are sectional views of a color filter panel of a transfective LCD in the steps of a manufacturing method according to the first embodiment of the present invention;

Figs. 4 and 5 are sectional views of color filter panels of a transfective LCD according to the second and the third embodiments of the present invention, respectively;

Figs. 6a, 7a, 8a, 9a, and 10a are layout views of a TFT array panel of a transfective LCD in the steps of a manufacturing method according to an embodiment of the present invention;

Fig. 6b is a sectional view of the TFT array panel shown in Fig. 6a taken along the line VIb-VIb';

Fig. 7b is a sectional view of the TFT array panel shown in Fig. 7a taken along the line VIIb-VIIb', which is the next step of Fig. 6b;

Fig. 8b is a sectional view of the TFT array panel shown in Fig. 8a taken along the line VIIIb-VIIIb', which is the next step of Fig. 7b;

Fig. 9b is a sectional view of the TFT array panel shown in Fig. 9a taken along the line IXb-IXb', which is the next step of Fig. 8b; and

Fig. 10b is a sectional view of the TFT array panel shown in Fig. 10a taken along the line Xb-Xb', which is the next step of Fig. 9b.

[DETAILED DESCRIPTION OF THE INVENTION]

[OBJECT OF THE INVENTION]

[FIELD OF THE INVENTION AND CONVENTIONAL ART IN THE FIELD]

The present invention relates to a color filter panel and a liquid crystal display including the same, especially a color filter panel and a transfective liquid crystal display including the same.

A liquid crystal display ("LCD") is one of the most prevalent flat panel displays, which includes two panels having field-generating electrodes and a liquid crystal layer interposed therebetween and controls the transmittance of light passing through the liquid crystal layer by adjusting voltages applied to the electrodes to re-arrange liquid crystal molecules in the liquid crystal layer.

Here, the transmittance of light is determined by the phase retardation generated due to the optical characteristic of liquid crystal material when the light passes through the liquid crystal layer, and such phase retardation can be controlled by adjusting the refraction index anisotropy of liquid crystal material and the distance between two panels.

The most popular one among those LCDs is one having electrodes on the respective panels and having a plurality of thin film transistors ("TFTs") for switching the voltages applied to the electrodes. Generally, the TFTs are provided on one of the two panels.

Such LCDs can be classified into two types, one of which is a transmissive type, displaying images by transmitting light from a specific light source called backlight through the liquid crystal layer, and the other of which is a reflective type, displaying images by reflecting external light such as natural light into the liquid crystal layer using a reflector of the LCD. Nowadays, a transflective type LCD operating in both a transmissive mode and a reflective mode is being developed.

On the other hand, a conventional LCD is equipped with red, green and blue color filters for realizing color displays. Color image is obtained by controlling the light transmittance passing through the respective red, green and blue color filters.

The transflective type LCD has a problem of display characteristic inferiority due to different phase retardation of the light passing through the liquid crystal layer between in the transmissive mode and in the reflective mode. That is, the light in the transmissive mode passes the liquid crystal layer only once to reach a user's eye, while the light in the reflective mode passes twice the liquid crystal layer. Therefore, the passages of the light in the two modes become different.

[TECHNICAL TASK OF THE INVENTION]

Therefore, the technical object of the present invention is to provide a color filter panel

having uniform light passage and a transfective liquid crystal display including the same.

[CONFIGURATION AND OPERATION OF THE INVENTION]

To achieve the above object, a color filter panel having a passivation layer covering a color filter and having a position-dependent thickness is provided.

A color filter panel for a liquid crystal display according to an embodiment of the present invention includes: a substrate; a color filter formed on the substrate; and a passivation layer covering the color filter and having a position-dependent thickness.

According to an embodiment of the present invention, the liquid crystal display includes a first display area displaying images mainly using a light source provided therein and a second display area displaying images mainly using an external light. Preferably, the thickness of the passivation layer in the first display area is smaller than in the second display area, and the thickness of the passivation layer in the first display area can be zero (0). It is preferable that the thickness of the color filter in the first display area is larger than in the second display area.

The color filter preferably includes a first portion and a second portion, and the thickness of the color filter in the first portion is larger than in the second portion. The color filter panel may further include a black matrix located near the edge of the color filter. Preferably, the color filter further includes a third portion located near the edge of the color filter, the thickness of the color filter in the third portion is larger than in the first portion, and at least a part of the third portion of the color filter overlaps the black matrix.

According to an embodiment of the present invention, the color filter panel further includes a common electrode equipped on the substrate.

A transfective liquid crystal display is provided, which includes: a first display panel having a passivation layer having a position-dependent thickness; and a second display panel opposite the first panel, the second panel comprising a field-generating electrode including a transparent electrode and a reflecting electrode having an opening on the transparent electrode.

The passivation layer preferably includes a first portion with a first thickness and a second portion with a second thickness larger than the first thickness, and the first portion is opposite the opening. The first thickness of the passivation layer in the first portion can be zero (0).

According to an embodiment of the present invention, the transparent electrode is located under said reflecting electrode, and the reflecting electrode has embossment.

Preferably, the second panel further includes a gate line, a data line and a thin film transistor electrically connected to the gate line, the data line and the transparent electrode.

According to an embodiment of the present invention, the first display panel further includes a color filter having a position dependent thickness. Also, the liquid crystal display may further include a black matrix located near the edge of the color filter.

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. The present invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein.

In the drawings, the thickness of layers, films and regions are exaggerated for clarity. Like numerals refer to like elements throughout. It will be understood that when an element such as a layer, film, region or substrate is referred to as being "on" another element, it can be directly on the other element or intervening elements may also be present. In contrast, when an element is referred to as being "directly on" another element, there are no intervening elements present.

Then, a color filter panel and a liquid crystal display including the same color filter panel according to embodiments of the present invention will be described with reference to the drawings.

First, a structure of an LCD according to an embodiment of the present invention is described in detail with reference to Figs. 1 and 2.

Fig. 1 is a layout view of a TFT array panel for a transflective LCD according to an embodiment of the present invention, and Fig. 2 is a sectional view of an LCD including the TFT array panel shown in Fig. 1 and a color filter panel according to the first embodiment of the present invention taken along the line II-II'.

As shown in Figs. 1 and 2, an LCD according to an embodiment of the present invention includes two panels 100 and 200 facing each other, spacers 310 for maintaining the gap between the two panels 100 and 200, and a liquid crystal layer 300 interposed between the two panels 100 and 200. The spacers 310 are made of organic insulating material and formed through photolithography process.

A plurality of gate lines 121 and a plurality of data lines 171, which intersect each other to define a plurality of pixel areas P arranged in a matrix, are formed on the lower panel 100. In each pixel area P, a TFT connected to the gate and the data lines 121 and 171, and a pixel electrode electrically connected to the TFT are provided. Each pixel electrode includes a transparent electrode 901 preferably made of transparent conductive film and a reflecting electrode 902 preferably made of reflective conductive film and having a transmitting window 196. An area occupied by the transmitting window 196 is referred to as a "transmissive area" T, while the remaining area of the pixel area P is referred to as a "reflective area" R hereinafter. In addition, areas of the lower panel corresponding to the transmissive area T and the reflective area R are referred to as the same names and numerals hereinafter.

A black matrix 220 having openings corresponding to the pixel areas P is formed on the upper panel 200 according to the first embodiment of the present invention, which faces the lower panel 100, and red, green or blue color filters 231 is formed on each pixel area P. The color filters 231 are covered with an upper passivation film 240, which are covered with a common electrode 250. For each of the red, green and blue color filters 231, a portion 232 located in the reflective area R has a thickness different from another portion 234 in the transmissive area. In this embodiment, the portion 234 in the transmissive area T has a larger thickness than the portion 232 in the reflective area R. Also for the upper passivation film, a portion located in the reflective area R has a thickness different from another portion in the transmissive area. In this embodiment, the organic insulating material of the portion in the transmissive area T has been removed.

Here, the reflective area R is mainly used for displaying images utilizing the light reflected from the reflecting electrode 902, while the transmissive area T is mainly used for displaying images utilizing the light from a backlight, its own light source.

In the LCD according to this embodiment of the present invention, the images in the transmissive area T are generated by the light which passed through the liquid crystal layer 300 only once, while those in the reflective area R are generated by the light which reaches the reflecting electrode 902 after passing through the liquid crystal layer 300 once and then passes through the liquid crystal layer 300 again after reflected by the reflecting electrode 902. Since the thickness of the upper passivation film 240 in the reflective area R is larger than that in the transmissive area T, two lights in the two areas T and R experience the liquid crystal layer 300

almost in the same degree. Accordingly, the retardation of the light for two areas T and R can be made to be equalized, thereby improving the display characteristic of the LCD. Especially for an ECB (electrically controlled birefringence) mode LCD which has various cell gap, path of the light for displaying an image can be made to be equalized by controlling the path d of the light passing through the liquid crystal layer in the transmissive area T and the reflective area R to satisfy the condition of $\Delta nd = \lambda / 2$.

Also, in the LCD according to this embodiment of the present invention, the images in the transmissive area T are generated by the light which passed through the color filter 231 only once, while those in the reflective area R are generated by the light which reaches the reflecting electrode 902 after passing through the color filter 231 once and then passes through the color filter 231 again after reflected by the reflecting electrode 902. Since the thickness of the color filter 231 in the reflective area R is smaller than that in the transmissive area T, two lights in the two areas T and R experience the color filter 231 almost in the same degree. Accordingly, the color reproduction properties for two areas T and R can be made to be equalized, thereby improving the display characteristic of the LCD.

Next, the structure of the lower panel of the LCD according to the embodiment of the present invention is described in more detail.

The lower panel 100 includes an insulating substrate 110. A plurality of gate lines 121 extending substantially in a transverse direction are formed on the substrate 110. Each gate line 121 has a single-layered structure preferably made of a material having low resistivity such as silver, silver alloy, aluminum or aluminum alloy. Alternatively, each gate line 121 has a multiple-layered structure including a layer or layers made of the above listed materials, and preferably including at least one layer having good contact characteristic with another material. A portion 125 near one end of each gate line 121 transmits gate signals from an external device to the gate line 121, and a plurality of branches 123 of each gate line 121 serve as gate electrodes 123 of TFTs.

A gate insulating layer 140 preferably made of silicon nitride (SiN_x) or the like covers the gate lines 121.

A plurality of semiconductor islands 150 preferably made of hydrogenated amorphous silicon is formed on the gate insulating layer 140 opposite the gate electrode 125, and a plurality of pairs of ohmic contacts 163 and 165 preferably made of silicide or n^+ hydrogenated

amorphous silicon heavily doped with n type impurity are formed on the semiconductor islands 150. One 163 of each pair of ohmic contacts 163 and 165 is separated from the other 165 with respect to corresponding one of the gate lines 121.

A plurality of data lines 171 and a plurality of drain electrodes 175 are formed on the ohmic contacts 163 and 165 and the gate insulating layer 140. The data lines 171 and the drain electrodes 175 preferably include a conductive material having low resistivity such as aluminum or silver. The data lines 171 extend substantially in a longitudinal direction to intersect the gate lines 121. A plurality of branches 173 of the data lines 171 extend to the upper surfaces of the ones 163 of the respective pairs of the ohmic contacts 163 and 165 to form a plurality of source electrodes 173 of the TFTs. A portion 179 near one end of each data line 171 transmits data signals from an external source to the data line 171. The drain electrodes 175 of the TFTs are separated from the data lines 171 and located on the others 165 of the respective pairs of the ohmic contacts 163 and 165 opposite the source electrodes 173 with respect to the corresponding gate electrodes 123.

A lower passivation layer 180 preferably made of silicon nitride or organic material with good planarizability is formed on the data lines 171, the drain electrodes 175 and portions of the semiconductor islands 150 without being covered by the data lines 171 or the drain electrodes 175.

A plurality of contact holes 185 and 189 respectively exposing the drain electrodes 175 and the end portions 179 of the data lines 171 are formed through the lower passivation layer 180, and a plurality of other contact holes 182 exposing the end portions 125 of the gate lines 121 are provided in the lower passivation layer 180 and the gate insulating layer 140.

A plurality of transparent electrodes 901 electrically connected to the drain electrodes 175 via the contact holes 185 are formed on the lower passivation layer 180 in the pixel areas P. In addition, a plurality of gate contact assistants 192 and a plurality of data contact assistants 199 respectively connected to the end portions 125 of the gate lines 121 via the contact holes 182 and to the end portions 179 of the data lines 171 via the contact holes 189 are formed on the lower passivation layer 180. The transparent electrodes 901 and the contact assistants 192 and 199 are preferably made of transparent conductive material such as ITO (indium tin oxide) or IZO (indium zinc oxide).

A plurality of reflecting electrodes 902 are formed on transparent electrodes 901, each

of which has a transmitting window 196. The reflecting electrodes 902 are preferably made of a conductive film having high reflectance such as aluminum, aluminum alloy, silver, silver alloy, molybdenum, or molybdenum alloy. The reflecting electrode 902 preferably has embossment due to the unevenness pattern of the underlying lower passivation layer 180, which enhances reflectance of the reflecting electrode 902. A pair of one of the reflecting electrodes 902 and the transparent electrode 901 thereunder form a pixel electrode. The shapes of the transmitting windows 196 of the reflecting electrodes 902 are various, and the number of the transmitting windows 196 in a pixel area is not limited to one but may be equal to or more than two.

Each pixel electrode 901 and 902 overlaps one of the gate lines 121 called a previous gate line 121, which transmits a gate signal to TFTs of a pixel row adjacent thereto, to form a storage capacitor. If the storage capacitance of the storage capacitor is too small, another storage capacitor formed of a conductor made of the same layer as the gate lines 121 and the pixel electrode 901 and 902 or another conductor connected to the pixel electrode 901 and 902 can be added.

Now, a manufacturing method of a color filter panel and a TFT array panel of an LCD according to an embodiment of the present invention is described in detail.

Figs. 3a through 3d are sectional views of a color filter panel in the steps of a manufacturing method according to the first embodiment of the present invention, and Figs. 4 and 5 are sectional views of color filter panels according to the second and the third embodiments of the present invention.

First, a manufacturing method of the color filter panel according to the first embodiment of the present invention is described in detail with reference to Figs. 3a through 3d.

First, as shown in Fig. 3a, a black matrix 220 is formed by depositing the upper surface of an upper insulating substrate 210 with a material having good light-blocking characteristic and patterning the deposited material through photolithography using a photomask.

Then, as shown in Fig. 3b, a negative photosensitive film 230 for color filter is coated on the upper surface of the upper insulating substrate 210. The negative photosensitive film 230 is a water-insoluble dispersion solution containing a photopolymerizable photosensitive composition including photopolymerization initiators, monomers, binders, etc., and one of red, green and blue pigments. Thereafter, the photosensitive film 230 is exposed to light through a

mask 400 which can vary the energy absorbed by the photosensitive film 230 for different areas A, B and C.

The photopolymerization of the exposed portions of the negative photosensitive film 230 for color filter results in insolubility of the portions for an alkali developing solution. More specifically, the photopolymerization initiators are activated to free-radical initiators upon exposure to the light, the free-radical initiators induce the monomers to generate free-radical monomers, and then the radical monomers are polymerized to polymers through chain-reaction polymerization. As a result, the exposed portions of the photosensitive film 230 become insoluble.

In this embodiment, the thickness of the photosensitive film 230 for color filter after developed is different depending on the position by differentiating the degrees of the insolubility of the photosensitive film 230 to the developing solution depending on the position, using a mask which can vary the exposure energy absorbed by the photosensitive film 230.

Here, the initial energy is almost fully transferred to portions of the photosensitive film 230 in the area A, while the initial energy is almost fully blocked not to reach portions in the area B. Portions of the photosensitive film 230 in the area C receive part of the initial energy, flux of which ranges from 10 mJ/cm² to 140 mJ/cm².

The area C can be obtained by using a mask 400 having a translucent portion with a slit pattern or a lattice pattern. When using a slit pattern, it is preferable that the width of the slits or the distance between the slits is smaller than the resolution of an exposer used in this step. Alternatively, the mask 400 with a translucent portion is obtained by making the thickness of a layer thereon to be different depending on the position or by using a plurality of layers having different transmissivity.

When exposed to light through the mask 400, the portions in the area C are polymerized in part, preferably 20-60%.

The photosensitive film 230 is developed using an alkali solution. Then, as shown in Fig. 3c, a color filter 231 having two portions 232 and 234 with different thickness is obtained.

An array of color filters is obtained by repeatedly performing these steps for red, green and blue color filters. Although this embodiment of the present invention uses the single mask 400 which can give the different exposure energies depending on the positions, another embodiment uses two or more masks, respective masks giving different exposure energies.

Subsequently, as shown in Fig. 3d, an upper passivation layer 240 is formed by spin coating of organic material on the substrate 210 on which the color filter 231 and the black matrix 220 are formed, and a portion corresponding to the transmissive area T, that is, the portion on the first portion 234 of the color filter 231 is removed through a photolithography process using a mask. Here, instead of removing the whole portion of the upper passivation layer 240 in the transmissive area, a part of the upper passivation layer 240 can be remained in the transmissive area T using a mask able to selectively control the light transmittance to adjust the light passages in the transmissive area T and the reflective area R.

Finally, as shown in Figs. 1 and 2, a common electrode 250 preferably made of a transparent conductive material such as ITO and IZO is formed on the color filter 231 and the upper passivation layer 240 to complete the color filter panel 200 (Fig. 2).

On the other hand, in a color filter panel for an LCD and a manufacturing method according to the second embodiment of the present invention, edge portions 235 of the color filter 231 overlapping the black matrix 220 has substantially the same thickness as the first portion 234, as shown in Fig. 4. That is, the area A is located at a position between the areas B and C in the mask 400. This makes the thickness of the second portion 232 of the color filter 231 in the area C to be uniform, and prevents the edges of the portion 232 of the color filter 231 from being detached when developing.

On the other hand, as shown in Fig. 5, the thickness of the color filters 236 in the transmissive area T and the reflective area R can be the same according to the color filter panel for liquid crystal display according to the third embodiment of the present invention and the manufacturing method thereof.

Now, a manufacturing method of a TFT array panel according to an embodiment of the present invention is described in detail with reference to Figs. 6a - 10b as well as Figs. 1 and 2.

First, as shown in Figs. 6a and 6b, a conductive material having low resistivity is deposited on an upper surface of a lower insulating substrate 110 and patterned to form a plurality of gate lines 121 substantially extending in a transverse direction and including a plurality of gate electrodes 123.

Next, triple layers of a gate insulating layer 140 preferably made of silicon nitride, a semiconductor layer preferably made of amorphous silicon, and a doped amorphous silicon

layer are deposited in sequence. The upper two layers of the semiconductor layer and the doped amorphous silicon layer are patterned in sequence using a photomask to form a plurality of semiconductor islands 150 and a plurality of doped amorphous silicon islands 160 thereon opposite the gate electrode 125, as shown in Figs. 7a and 7b.

Subsequently, as shown in Figs. 8a and 8b, a conductive layer is deposited and patterned using photolithography to form a plurality of data lines 171 intersecting the gate lines 121 and a plurality of drain electrodes 175. Each data line 171 includes a plurality of source electrodes 173 extending to an upper surface of the corresponding doped amorphous silicon islands 160. The drain electrodes 175 are separated from the data lines 171 and opposite to the related source electrodes 173 with respect to the gate electrodes 123.

Thereafter, portions of the doped amorphous silicon islands 160, which are not covered with the data lines 171 and the drain electrodes 175, are removed so that each doped amorphous silicon island 160 is divided into two ohmic contacts 163 and 165 with respect to the gate electrode 123, and portions of the semiconductor island 150 under the removed portions of the doped amorphous silicon island 160 are exposed. It is preferable to perform oxygen plasma treatment to stabilize the surface of the exposed portions of the semiconductor islands 150.

Succeedingly, a lower passivation layer 180 is formed by deposition of organic material with low dielectric constant and good planarizability or insulating material such as silicon nitride. Thereafter, as shown in Figs. 9a and 9b, the lower passivation layer 180 and the gate insulating layer 140 are patterned by dry etch using photolithography to form a plurality of contact holes 182, 185, and 189 exposing end portions 125 of the gate lines 22, the drain electrodes 175 and end portions 179 of the data lines 171, respectively.

Subsequently, as shown in Figs. 10a and 10b, an ITO layer or an IZO layer is deposited and patterned using a photomask to form a plurality of transparent electrodes 901 connected to the associated drain electrodes 175 via the contact holes 185, and a plurality of gate contact assistants 192 and data contact assistants 199 connected to the end portions 125 of the gate lines 121 and the end portions 179 of the data lines 171 via the contact holes 182 and 189, respectively.

Finally, as shown in Figs. 1 and 2, a plurality of reflecting electrodes 902, each having a transmitting window 196, are formed by depositing and patterning a conductive layer with high reflectance such as aluminum, silver, or molybdenum.

While the present invention has been described in detail with reference to the

preferred embodiments, it is to be understood that the invention is not limited to the disclosed embodiments, but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

[ADVANTAGE OF THE INVENTION]

As described above, degree of the phase retardation of which the light for displaying image experiences in each area can be equalized by forming the passivation layer in the transmissive area to have a smaller thickness than in the reflective area. Especially for an ECB mode LCD which has various cell gap to improve the brightness in the transmissive area and the reflective area, the step height of the organic layer between the transmissive area and the reflective area can be ensured using a transparent organic layer of the color filter panel. That is, light effectiveness for the liquid crystal layer in the transmissive area and the reflective area is improved by controlling the difference of the step heights between in the transmissive area and in the reflective area to satisfy the condition of $\Delta nd = \lambda / 2$. Then, the light transmittance in the two areas can be unified to improve the display characteristic of the LCD.

[CLAIMS]

1. A color filter panel for liquid crystal display comprising:
a substrate
a color filter formed on said substrate; and
a passivation layer covering said color filter and having a position-dependent thickness.
2. The color filter panel of claim 1, wherein said liquid crystal display includes a first display area displaying images mainly using a light source provided therein and a second display area displaying images mainly using an external light.
3. The color filter panel of claim 2, wherein the thickness of said passivation layer in said first display area is smaller than in said second display area.
4. The color filter panel of claim 3, wherein the thickness of said passivation layer in said first display area is zero (0).
5. The color filter panel of claim 2, wherein the thickness of said color filter in said first display area is larger than in said second display area.
6. The color filter panel of claim 1, wherein said color filter includes a first portion and a second portion, and the thickness of said color filter in said first portion is larger than in said second portion.
7. The color filter panel of claim 6, further comprising a black matrix located near the edge of said color filter.
8. The color filter panel of claim 7, wherein said color filter further includes a third portion located near the edge of said color filter, and the thickness of said color filter in said third portion is larger than in said first portion.
9. The color filter panel of claim 8, wherein at least a part of said third portion of said color filter overlaps said black matrix.
10. The color filter panel of claim 1, further comprising a common electrode equipped on said substrate.
11. A transmissive liquid crystal display comprising:
a first display panel having a passivation layer having a position-dependent thickness;
and
a second display panel opposite said first panel, said second panel comprising a field-generating electrode including a transparent electrode and a reflecting electrode

having an opening on said transparent electrode.

12. The transflective liquid crystal display of claim 11, wherein said passivation layer includes a first portion with a first thickness and a second portion with a second thickness larger than said first thickness, and the first portion is opposite said opening.

13. The transflective liquid crystal display of claim 12, wherein said first thickness of said passivation layer in said first portion is zero (0).

14. The transflective liquid crystal display of claim 11, wherein said transparent electrode is located under said reflecting electrode.

15. The transflective liquid crystal display of claim 11, wherein said reflecting electrode has embossment.

16. The transflective liquid crystal display of claim 11, wherein said second panel further comprises a gate line, a data line and a thin film transistor electrically connected to said gate line, said data line and said transparent electrode.

17. The transflective liquid crystal display of claim 11, wherein said first display panel further comprises a color filter having a position dependent thickness.

18. The transflective liquid crystal display of claim 17, further comprising a black matrix located near the edge of said color filter.